Appendix A – Milestone Review Fly Sheet

Milestone Review Flysheet

PDR, CDR, FRR

Institution Name	Northwest Indian College

Milestone	CDR

Vehicle Properties	
Diameter (in)	6
Length (in)	83
Gross Liftoff Weight (lb)	15.3
Launch Lug/button Size	0.630" x 0.680" (large)
Motor Retention	10-24 Tie Down Bolts

Motor Properties	
Motor Manufacturer	CTI
Motor Designation	K445
Max/Average Thrust (N/lb)	664/403.86 N 177.1/102.85 lbs
Total Impulse (N-sec/lb-sec)	1636.3/333.68
Mass pre/post Burn (lb)	3.08/1.38

Stability Analysis	
Center of Pressure (in from nose)	70.3
Center of Gravity (in from nose)	57.6
Static Stability Margin	2.09
Thrust-to-Weight Ratio	10:1
Rail Size (in) / Length (in)	1.5" X 1.5"/96"

Ascent Analysis	
Rail Exit Velocity (ft/s)	65.3
Max Velocity (ft/s)	617
Max Mach Number	0.55
Max Acceleration (ft/s^2)	286.7
Peak Altitude (ft)	5,343

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model	Top Flite			
Size	28			
Altitude at Deployment (ft)	5,280			
Velocity at Deployment (ft/s)	0.0024			
Terminal Velocity (ft/s)	59.41			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	1/8"			
Recovery Harness Length (ft)	24			
Harness/Airframe Interfaces	1/8" Kevlar Loops			
Kinetic Energy During Descent (ft-lb)	Section 1	Section 2	Section 3	Section 4
	417	64	324	

Recovery System Properties				
Main Parachute				
Manufacturer/Model	Top Flite			
Size	50			
Altitude at Deployment (ft)	800			
Velocity at Deployment (ft/s)	59.41			
Landing Velocity (ft/s)	21.27			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	1/8"			
Recovery Harness Length (ft)	24			
Harness/Airframe Interfaces	1/8" Kevlar Loops			
Kinetic Energy Upon Landing (ft-lb)	Section 1	Section 2	Section 3	Section 4
	67	10	52	

Recovery System Properties	
Electronics/Ejection	
Altimeter(s) Make/Model	PerfectFlite StratoLogger
Redundancy Plan	Redundant Dual Recovery with 2 PerfectFlite StratoLogger altimeters with independent power supplies
Pad Stay Time (Launch Configuration)	2 hrs

Recovery System Properties	
Electronics/Ejection	
Rocket Locators (Make, Model)	Garmin Astro
Transmitting Frequencies	2.4 GHz frequency band is between 2.400-2.4835GHz. The Garmin GPS frequencies 151.82, 151.88, 151.94, 154.57, and 154.60 MHz.
Black Power Mass Drogue Parachute (gram)	4
Black Power Mass Main Parachute (gram)	6

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Payload/Science	
Succinct Overview of Payload/Science Experiment	An autonomous multirotor vehicle that will tow the rocket back to the launch area
Identify Major Components	Nosecone, ebay, airframe, fins, motor mount, GPS, 2 altimeters, drogue and main parachutes, multirotor vehicle
Mass of Payload/Science	3 pounds

Test Plan Schedule/Status	
Ejection Charge Test(s)	11/10, 11/20, 12/4 complete
Sub-scale Test Flights	3-Nov - complete
Full-scale Test Flights	12/1, 12/8, 12/15, 1/7, 1/13, 1/20

Additional Comments